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## SUMMER REFRIGERATION.

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PHILOSOPHERS have often called attention to the curious influence which the experience of childhood is apt to exert on the theories of after years. A city lad who has passed his vacations in the highlands will come to associate the advantages of country life with his plans of salvation ; an overworked backwoods boy, who has enjoyed the hospitality of an indulgent city uncle will prefer St. Augustin's City of the Blest to the shadiest idyl of Elysium. In a similar way the predilections of civilized nations seem to be biased by the habits of their primitive ancestors. Wealthy Turks, even in the chill climate of Adrianople, still pass the evening hour squatting silently at the foot of their doorsteps, as their nomadic forefathers did in front of their desert tents. The descendants of the sea-faring Normans are still the most enterprising emigrants of northern France. A Mexican land-owner of my acquaintance noticed with surprise that the American colonists of his neighborhood preferred treeless to wooded tracts of land, and pitched their tents in the dry gravel of an abandoned cotton-field. "Next summer," said he, "they will be sorry for it ; but I suppose they come from some part of the States where trees were badly in their way, and where droughts never amounted to much."

And if that shrewd hidalgo could study the architecture of our North American cities he would readily infer that the builders of such houses and streets must have come from a country of hard winters and very mild summers. Our dwelling-houses are winter forts. They defend us from snow and storms, and combine manifold facilities for the production of artificial warmth ; our streets, with their long ramparts of unbroken masonry, admit every ray of the vertical sun, but exclude the breezes that sweep freely through the open arcades of the forest ; our clothes are

calorific contrivances, calorific food forms the perennial staple of our diet ; all our domestic arrangements seem carefully calculated to make winter as tolerable and summer as intolerable as possible. A few months ago a prominent religious weekly estimated that during the past winter the organized charities of a single Christian denomination distributed in the United States a weekly average of 104,000 bushels of coal. Coal riots (as in Dakota, where a fuel train was stopped and emptied by the armed inhabitants of a treeless settlement) are more readily condoned than even bread riots ; every larger forest furnishes free fuel for scores of impecunious neighbors. As in the days of our Scandinavian forefathers, gods and men still join in the battles against Rymir, the frost giant ; but the cry for help against the Dog-star fiend—the Noon-day Devil of the Semitic pandemonium—appeals in vain to the sympathies of our northern souls. And while the cities of pagan Rome vied in the establishment of free public baths, the cities of Christian North America vie in the enactment of penal by-laws against the use of the scant bathing facilities by which a convenient river might mitigate the midsummer martyrdom of the poor. In combination with the influence of the compulsory indoor life of our workshops and factories, our peculiar type of civilization has, indeed, succeeded in completely inverting the order of Nature's almanac, and doomed millions of our fellow men to endure the maximum misery of their existence at the very season when the creatures of the wilderness celebrate life as a festival.

Habitual indoor life might tend to produce that result even in a climate of less torrid summers, but it seems certainly strange that an artificial evil has failed to suggest the usual expedient of an artificial remedy. The problem of refrigerating a summer house should seem to offer no insuperable difficulties to the inventive genius of an age that has managed to create an artificial summer amidst the snows of Quebec and St. Paul ; for after all, *cold*, like darkness, silence, or poverty, is a mere negative condition, and refrigeration a deductive, rather than productive, process. The time may come when suffering from an excess of heat will seem as strange an *embarras de richesse* as a complaint about an excess of light or a superfluity of bed-clothing. In a state of nature the problem of survival has no difficulties in summer time. Wild animals that risk to perish in cold weather,

pass their summer noons pleasantly enough in forest glens or in the shade of caverns ; the pachyderms of the tropics keep their siesta in a state of semi-submersion ; savages avoid the inconvenience of summer heat by negative precautions, less exercise, less clothing, a minimum of calorific food. The Bedouins, even, of the great desert, if not migrating, pass their afternoons day-dreaming in the shade of a tent or at the brink of a rock-sheltered spring.

Civilization has deprived us of such expedients, and ought to devise available substitutes. The architecture of our dwelling-houses would admit of manifold improvements, but there is no doubt that even the average tenement, or, indeed, any structure of weatherproof walls, could be made habitable by the introduction of cold, as well as by the introduction of warm, air. Ice is cheap, and could be made cheaper than the cheapest fuel, and the experiments with the government buildings of Vienna and Washington, and the arsenal workshops of Marseilles, prove that the largest halls can be cooled to a temperature of 20 to 30 degrees below that of the outdoor atmosphere. In the cartridge factory of the Marseilles arsenal, a hall of fifty feet square by sixteen high, and ventilated by means of revolving fans, the temperature was, in one instance, kept *forty-five degrees* Fahrenheit below that of the coolest nooks of the adjoining streets ; in other words, while the outdoor thermometer may rise to a hundred degrees in the shade, a room large enough for a lecture-hall can be brought to a thermal condition resembling that of a breezy October day in the highlands, and cool enough to chill flies into inactivity. In Washington, similar results have been obtained with the most primitive apparatus, a combination of air-pumps and ice-boxes, connected with pipes unprotected by any thermal non-conductors, yet efficient enough to suggest the possibility of completely restoring the amenities of the summer season.

Considering the number of refrigerating agencies known to modern chemistry, there would, indeed, be nothing surprising in the invention of a parlor cooler, as portable as a small cooking-stove ; and it needs no special clairvoyance to foresee that the cities of the future will have refrigeration companies and Arctic reservoirs with network of cold-air pipes, and that their plutocrats will freeze their ears in over-cooled summerhouses with the complacency of Hacklaender's *parvenu*, who endured all the horrors

of the Calcutta Blackhole, to demonstrate his ability of indulging in a lavish expenditure of fuel.

The antiseptic uses of artificial cold are likewise destined to assume proportions hardly anticipated by the constructor of the first refrigerating car. Refrigeration is nature's method for counteracting the decomposition of organic tissues, and the chemist of the future may smile at the barbarisms of the primitive plan which tried to prevent decay by the use of parasite-killing poisons. The protective efficacy of salt, pepper, and mustard being exactly analogous to that of the arsenious acid by which the taxidermist insures the integrity of his mummies. Frozen meat will keep for an unlimited length of time ; the undecayed mammoth carcass discovered in the sand of a Siberian river-delta had thus been preserved for a period measured perhaps by millenniums ; and the experiments of a Belgian chemist have established the fact that in a dry and uniformly cold store-room even raspberries can be kept from June to the end of the next winter.

In October, when the first night-frosts expurgate the atmosphere of our Southern swamps, ague and yellow fever subside with a suddenness which would certainly have suggested the idea of curing climatic diseases by artificial refrigeration, if *cold* had not somehow become the hygienic bugbear of the Caucasian race. Gout, rheumatism, indigestion, toothaches, and all sorts of pulmonary disorders are ascribed to the influence of a low temperature, with persistent disregard of the fact that the outdoor laborers of the higher latitudes are the halest representatives of our species. "Catching cold" is the stereotyped explanation for the consequences of our manifold sins against the health laws of Nature ; but the secret of the delusion can be traced to the curious mistakes which logicians used to sum up under the head of the "*post hoc ergo propter hoc* fallacy,"—the tendency of the human mind to mistake an incidental concomitance for a causal connection. Woodpeckers pick insects from the trunks of dead trees, and the logic of concomitance infers that the decay of the tree has been caused by the visits of the birds, which in our Southern States are, indeed, known as "sap-suckers." Young frogs emerge from their hiding places when a long drought is broken by a brisk rain, and the coincidence of the two phenomena has not failed to evolve the theory of a frog-shower. In winter, when millions of city dwellers breathe the air of ill-ventilated dwelling houses,

lung affections are more frequent than in midsummer, when ventilation is enforced by the horrors of stagnant heat. But the coincidence of frosts and catarrhs has decided the bias of the popular hypothesis, and in sixteen different European languages the world *cold* has become a synonym of an affection which the absolutely conclusive evidence of physiological facts proves to be a result of vitiated warm indoor air, and to be curable by cold outdoor air. In other words, the best remedy has been mistaken for the cause, and as a consequence catarrhs are considerably more frequent than all other disorders of the human organism taken together.

If cold outdoor air were the cause of pulmonary affections, the frequency of such affections would increase with the distance from the equator, and the prevalence of outdoor occupations ; but it so happens that among the natives of the Arctic regions lung diseases are almost unknown, and that consumption is from ten times to twenty-five times more frequent in the cities of the lower temperate zone than in the pastoral regions of Scotland and Scandinavia. Consumptives have also ascertained (if not explained) the circumstance that their affliction can be relieved by a winter bivouac in the Adirondacks far more promptly than by a sojourn in the perennial summer of the Bermudas ; nay, that even impure cold air is a more effective lung balm than warm air, for the intense frosts of the Arctic winter nights disinfect even the foul hovels of the Esquimaux seal hunters.

The gastronomic exploits of those same seal hunters would leave no doubt that cold air is the most effective peptic stimulant, if local experience should fail to convince us that digestive disorders increase with every warm summer and decrease with the temperature of the shortening days. The diseases of infancy are chiefly summer diseases, so much, indeed, that their average death rate during the six warmest weeks relates as 3 to 1 in northern Europe, and as 4½ to 1 in North America, to the average death rate of the six coldest weeks. All *zymotic* diseases, *i. e.*, cholera and small-pox, as well as yellow fever, are more virulent in summer than in winter. The opponents of the "germ theory of disease" must at least empirically admit the fact that in ninety-nine of a hundred cases warm air promotes and cold air counteracts the development of disease, just as they promote and counteract the development of maggots and mushrooms. Cold air

is an antidote which mitigates the effects even of those anorganic poisons which the stimulant-vice has made almost a necessity of existence to a large portion of our fellow men ; for we find that the degree of impunity in the use of intoxicating drinks decreases with the degree of latitude, and that the organism of a Russian soldier can eliminate, if not assimilate, a quantum of ardent spirits that would transfer his French comrade to the spirit land.

Cold air is Nature's panacea, as proved by numberless facts which are being more generally recognized the more the study of disease has been diverted from the suppression of the symptoms to the removal of the cause, and it would be an insult to the intelligence of the coming generation to doubt that the hospitals of the future will be ice-houses.

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